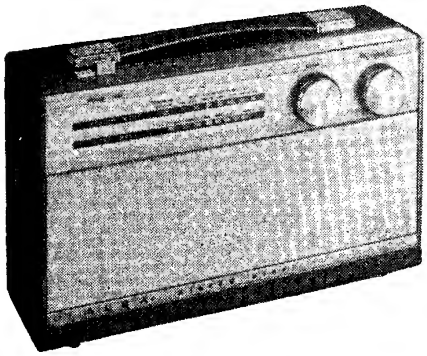
Supplement to Wireless & Electrical Trader, 31 August 1963

"TRADER" SERVICE SHEET

1616

ALBA 99 "Swallow"

Portable Transistor Radio Receiver



OPERATING from two 9V dry batteries, Alba 99 is a six-transistor portable radio receiver covering Medium and Long wavebands. An internal ferrite rod aerial is fitted and two sockets are provided, one for the connection of an external aerial and the other to feed the output into a tape recorder. The circuit features a single-ended push-pull output stage with 18V applied across the output pair. Only one stage of i.f. amplification is employed.

Release date and original price: July 1962, £14 5*s* 2*d*. *Purchase tax extra.*

Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 AF117*	0·95	1·0	8·1
TR2 AF117*	1·65	1·7	6·25
TR3 OC70†.....	0·87	0·9	5·3
TR4 OC81D§	1·80	1·7	8·1
TR5 OC81†.....	8·90	9·0	18·0
TR6 OC81†.....	0·02	0·16	9·0

**Positive meter terminal connected to the tuning gang frame.*
†Positive meter terminal connected to full battery positive.
§Positive meter terminal connected to battery centre tap.

TRANSISTOR ANALYSIS

Transistor voltages given in the table in col. 1 were taken from information supplied by the manufacturer. All readings are negative with respect to the points indicated in the table.

CIRCUIT DESCRIPTION

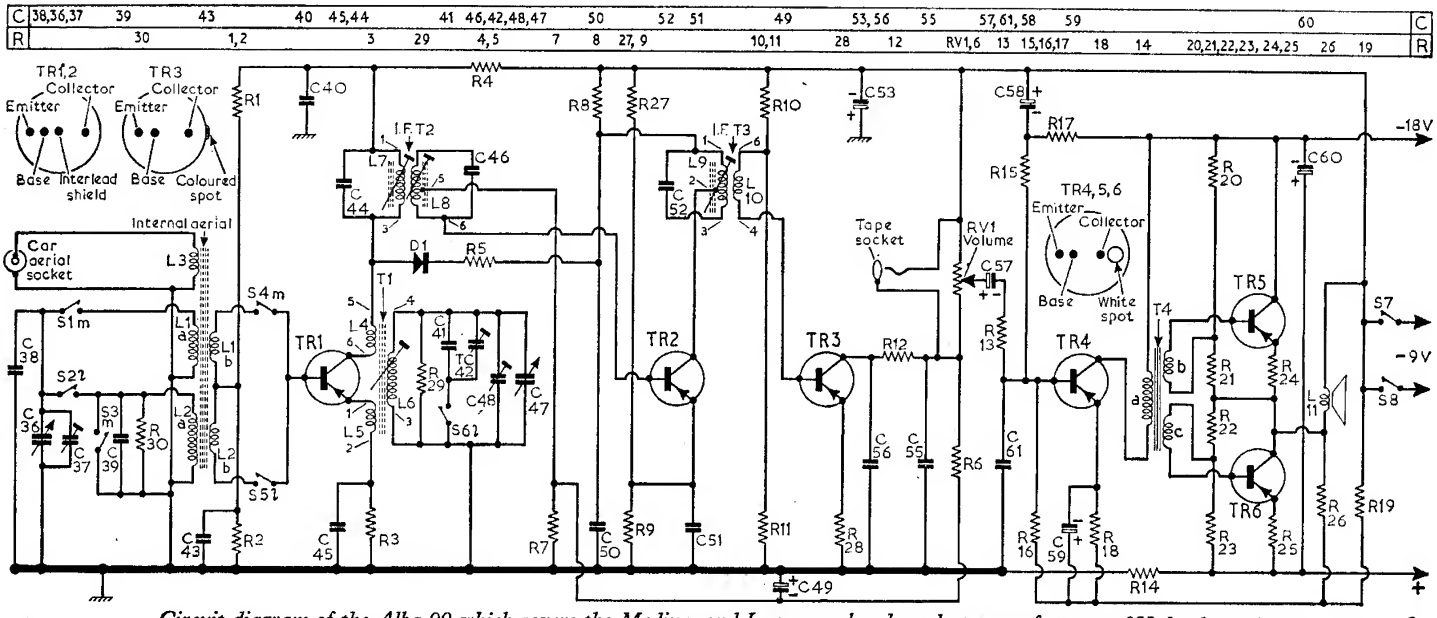
Input from the ferrite rod aerial coils **L1a** and **b** (m.w.) and **L2a** and **b** (l.w.) is fed to the base of the mixer **TR1**. The aerial coils are tuned by **C36, C37** and **C38** with **C39** added on l.w. **R30** is fitted where necessary to damp **L2a** on l.w. An external aerial may be coupled to the ferrite rod via **L3**.

The local heterodyne signal is generated

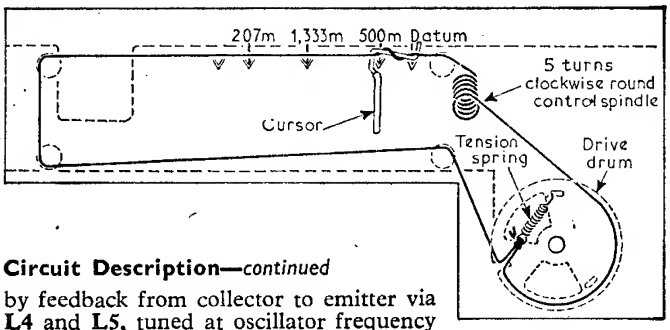
(*Continued overleaf col.* 1)

Resistors		
R1	39kΩ	B2
R2	6·8kΩ	B2
R3	1kΩ	B1
R4	100Ω	A2
R5	680Ω	A2
R6	15kΩ	A2
R7	12kΩ	A2
R8	560Ω	A2
R9	330Ω	A2
R10	47kΩ	A3
R11	100Ω	A3
R12	100Ω	A3
R13	330Ω	A3
R14	150Ω	B3
R15	27kΩ	B3
R16	10kΩ	A3
R17	680Ω	B3
R18	330Ω	B3
R19	10Ω	B3
R20	2·7kΩ	B2
R21	56Ω	B2
R22	2·7kΩ	B3
R23	56Ω	B3
R24	5Ω	B2
R25	5Ω	B2
R26	1·2kΩ	B3
R27	4·7kΩ	A2
R28	270Ω	A3
R29	220kΩ	B2
R30*	220kΩ	—
RV1	20kΩ	—
Capacitors		
C36	—	C2
C37	—	C2
C38	8·2pF	B2
C39	120pF	B1
C40	0·04μF	A1
C41	220pF	B2
C42	110pF	B2
C43	0·04μF	B2
C44	560pF	A1
C45	0·02μF	B2
C46	560pF	A1
C47	—	C2
C48	—	C2
C49	16μF	A2
C50	0·04μF	A2
C51	0·5μF	A2
C52	250pF	A2
C53	250μF	A3
C55	0·01μF	A3
C56	0·01μF	A3
C57	8μF	B3
C58	50μF	A3
C59	100μF	B3
C60	100μF	C2
C61	0·01μF	A3
Coils		
L1a	—	C1
L1b	—	C1
L2a	—	A1
L2b	—	A1
L3	—	A1
L4	—	B2
L5	—	B2
L6	—	B2
L7	—	A1
L8	—	A1
L9	—	A2
L10	—	A2
L11	25Ω	B2
Miscellaneous		
D1	OA79	B2
T4 a	220Ω	B3
T4 b	50Ω	B3
T4 c	50Ω	B3
S1-S6	—	B1
S7, S8	—	—

**Not fitted on some receivers*



Circuit diagram of the Alba 99 which covers the Medium and Long wavebands and operates from two 9V dry batteries



Drive cord assembly shown with the tuning gang at maximum capacitance. Calibration marks on the scale backing plate are required for circuit alignment

Circuit Description—*continued*

by feedback from collector to emitter via **L4** and **L5**, tuned at oscillator frequency by **L6, R29, C47** and **C48** with **C41** and **C42** added in parallel on l.w. I.f. signals at 470kc/s in **TR1** collector are coupled by the double-tuned transformer **IFT2** to the base of **TR2** which operates as the i.f. amplifier. **D1** in conjunction with **R8** supplements normal a.g.c. action by conducting on large signals and damping **L7**. Base bias for **TR2** is derived from the network **RV1, R6** and **R7.**

Amplified i.f. output from **TR2** is coupled via the single-tuned transformer **IFT3** to the base of **TR3** which operates as detector and audio amplifier. Rectified audio signals are passed through the i.f. filter **R12, C55** and are developed across the collector load and volume control **RV1.** The d.c. potential present at the junction of **R12** and **RV1** is fed via **R6** to the base of **TR2** as a.g.c. voltage. The tape socket is wired across the volume control and provides an audio output independent of the control. Driver transistor **TR4** is biased by a combination of the voltage dropped across **R17, R15, R16** and **R19** and that developed across the emitter resistor **R18.**

TR4 has the primary of the phase-splitting transformer **T4** connected in its collector circuit feeding equal and opposite voltages from separate secondaries to the bases of **TR5** and **TR6.** These transistors operate in Class B push-pull and drive the high impedance loudspeaker and load impedance **L11.** A portion of the output which is developed across **R26** and **R19** is coupled to the driver **TR4** as negative feedback.

CIRCUIT ALIGNMENT

Equipment Required.—An a.m. signal generator with 30 per cent modulation; an audio output meter with a 0-100mV range and an impedance of 35Ω; a length of insulated wire to form an r.f. coupling loop and a 0.1μF isolating capacitor.

To perform alignment it is necessary to remove the chassis from its case. During alignment, the level of input signal should be adjusted to maintain an output of 50mW.

1.—Set the output meter to its 100mW range and connect it across the speaker leads. Connect the signal generator across the aerial section of the tuning gang **C36** (white lead). Switch receiver to l.w. and turn the volume control to maximum. Rotate the tuning gang to the fully open position.

2.—Feed in a 470kc/s 30 per cent modulated signal and adjust the cores of **L9** (location reference A2) **L8** (A1) and **L7** (A1) in that order for maximum output. Repeat as necessary using a reduced signal input.

3.—Check i.f. sensitivity as follows: Tune receiver to 300m. Using a 470kc/s 30 per cent modulated signal and coupling the signal generator via the 0.1μF capacitor, an output of 50mW should be obtained for an input not greater than 60mV to **TR3** base, 200μV to **TR2** base and 20μV to **TR1** base.

4.—Connect the signal generator to the r.f. coupling loop and loosely couple the loop to the ferrite rod aerial coils. Switch receiver to medium wave.

5.—Rotate the tuning gang to the fully meshed position and check that the upper (shorter) arm of the cursor coincides with the end datum mark on the scale backing plate. Then set the cursor to the 500m calibration mark. Feed in a 600kc/s signal and adjust **L6** (B2) and **L1** (C1) for maximum output.

6.—Set the cursor to the 207m calibration mark, feed in a 1,450kc/s signal and adjust **C48** (C2) and **C37** (C2) for maximum output. Repeat until no further improvement can be obtained.

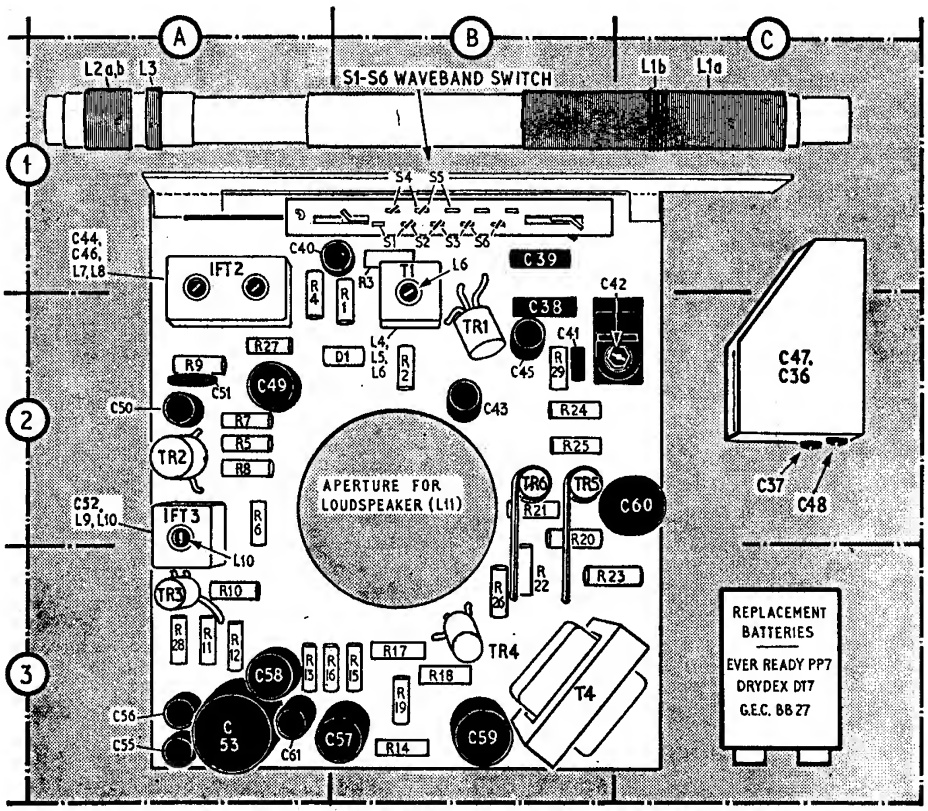
7.—Switch receiver to l.w. and set the cursor to the 1,333m calibration mark. Feed in a 225kc/s signal and adjust **C42** (B2) and **L2** (A1) for maximum output. Repeat for optimum results.

GENERAL NOTES

Dismantling.—Access to the batteries, ferrite rod aerial assembly and foil side of the printed circuit panel is obtained by turning the two latches and lifting off the back cover. Restricted access to the component side of the printed panel can be obtained by removing the two Phillips-head screws securing the corners of the panel to the chassis frame.

For complete removal of the chassis from its case (required for alignment), proceed as follows: Remove the batteries. Remove the front control knobs by slackening their grub screws. Take out two screws and washers (one each end of the control panel) securing the chassis to the case. Ease out from the bottom and withdraw the chassis assembly guiding the press-buttons out of the aperture in the front moulding. After withdrawal sufficient freedom for most servicing operations will be provided by unsoldering the external aerial leads.

Batteries.—Two Ever-Ready PP7 or equivalent.



Front view of the chassis giving component locations and alignment adjustments

Printed in Great Britain by Cornwall Press, Ltd., Paris Garden, Stamford Street, London, S.E.1, and Published by Iliffe Electrical Publications, Ltd., Dorset House, Stamford Street, London, S.E.1.